

UNITED NATIONS DEVELOPMENT PROGRAMME



**CAPACITY BUILDING FOR THE RAPID
COMMERCIALIZATION OF RENEWABLE
ENERGY**

**UNITED NATIONS DEVELOPMENT PROGRAMME
CAPACITY BUILDING FOR THE RAPID
COMMERCIALIZATION OF RENEWABLE ENERGY**

**CO-FINANCED BY
GOVERNMENT OF CHINA
GLOBAL ENVIRONMENTAL FACILITY
GOVERNMENT OF AUSTRALIA
GOVERNMENT OF THE NETHERLANDS**

**IMPLEMENTED BY STATE ECONOMIC AND TRADE COMMISSION
CO-IMPLEMENTED BY STATE ENVIRONMENTAL PROTECTION AGENCY
EXECUTED BY UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL
AFFAIRS**

**US-CHINA RENEWABLE ENERGY FORUM
ARLINGTON, VA, APRIL 19-20, 2000**

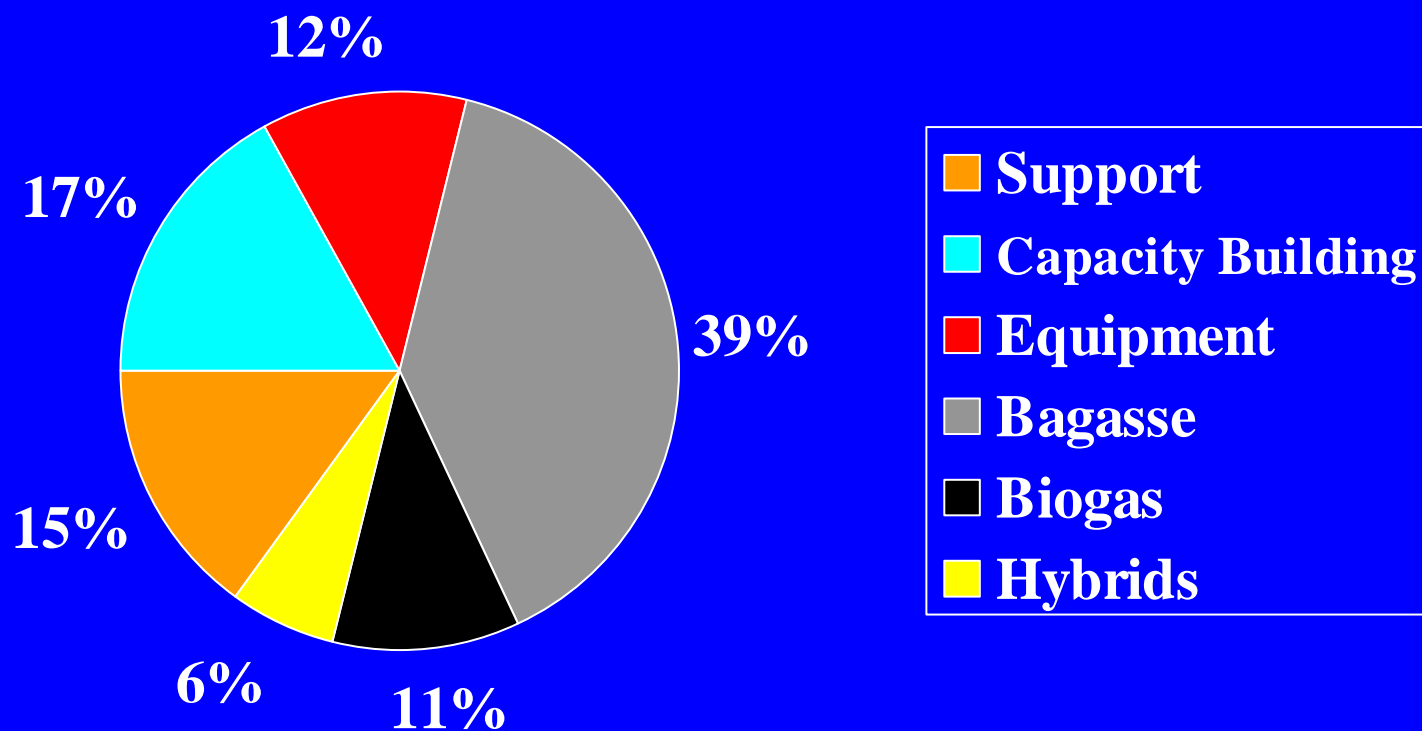
PMO Project Personnel

- **Zhai Qing, SETC, National Project Director - zhaiqing123@263.net**
 - **Liu Hongpeng, SETC, Director of the PMO - liuhp@public.bta.net.cn**
 - **Luo Gaolai, SEPA, Deputy Director of the PMO - luogl@svr1-pek.unep.net**
 - **Li Shaoyi, UNDESA, Deputy Director of the PMO - lis@un.org**
 - **Wang Zhongying, National Project Coordinator- wzhying@public.bta.net.cn**
 - **William Wallace, Senior Technical Advisor - wallaceb@public3.bta.net.cn**
 - **James Graham, United Nations Volunteer for PMO- james.graham@263.net**
 - **Frederic Asseline, United Nations Volunteer for CREIA-creia@163bj.com**
-
- **TEL: 10 6641 7340; 6688; 8675**
 - **TEL and FAX: 10 6641 1401**
 - **WEBSITE PMO: <http://www.ccre.com.cn>**
 - **WEBSITE CREIA: <http://www.creia.net>**

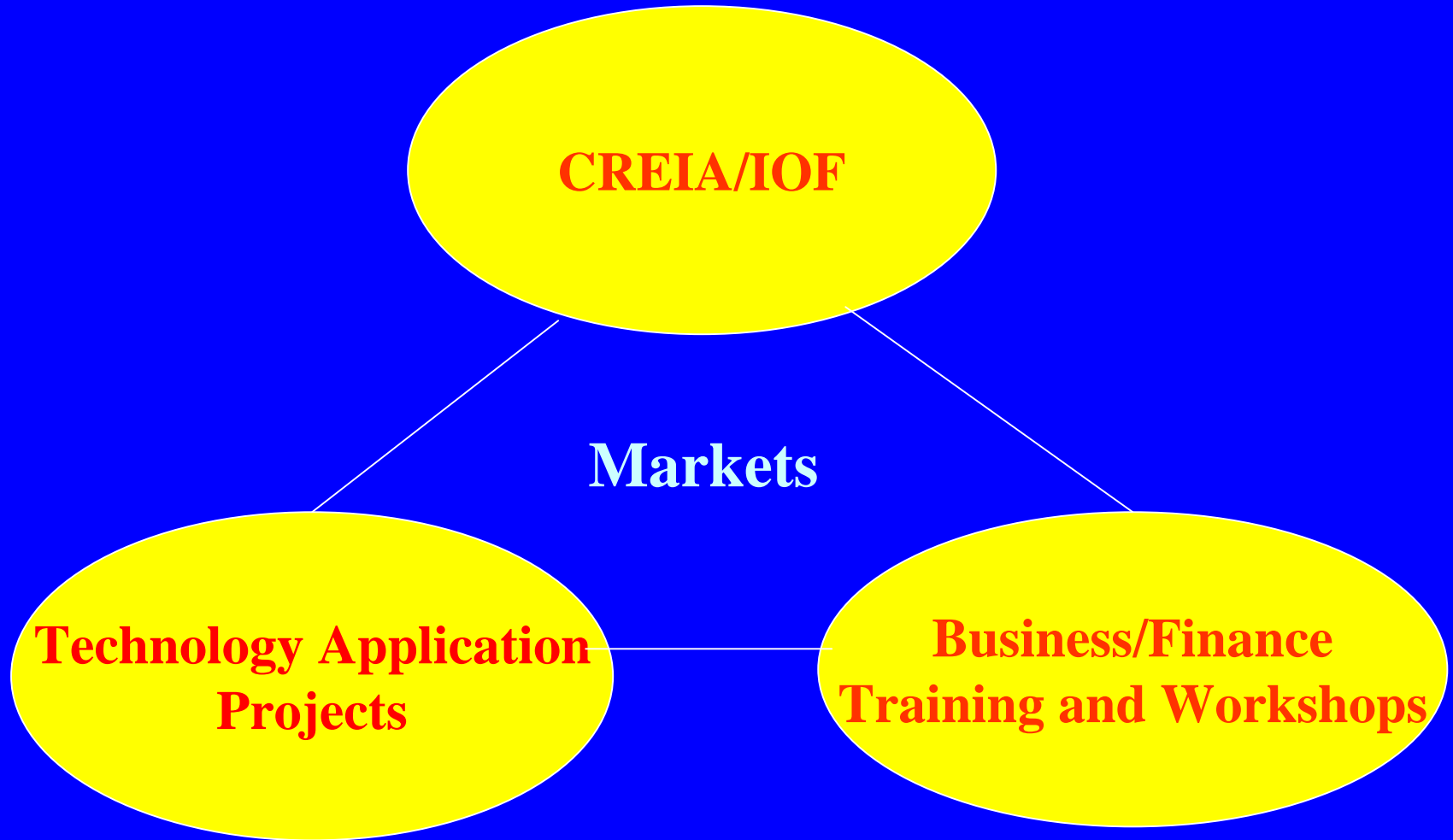
Project Objectives

- **Support acceleration of sustainable commercialization of renewables in China**
- **Address policy, business/finance, and technical barriers**
- **Detectable increase in rate of deployment of renewables traceable to the Project activities**
- **Strong interface with industry**
- **Transfer of international experience and technology**
- **Target specific technology and application sectors**
- **Coordinate with other renewable energy programs**

Project Budget Distribution (\$25.8 M USD)



Project Components



Chinese Renewable Energy Industries Association

- **Interface of Project activities with Chinese renewable energy industries and other stakeholders**
- **Investment Opportunity Facility to link projects with investors**
- **Act on industries' behalf to advance renewable energy commercialization**
- **Coordinate commercialization strategy of Project**
- **Coordinate a series of workshops and training activities**

Technology/Application Projects

- **Promote transfer of advanced commercial technology**
- **Replication of “flexible” system designs**
- **Address infrastructure issues for sustainability**
- **Dissemination of international best practices**
- **Design and financing guide books**



Biogas



Biogas Livestock Farm Plant Projects

<i>Characteristics</i>	<i>Dengta</i>	<i>Beijing/Shunyi</i>
<i>Location</i>	Hangzhou in Zhejiang Province	Shunyi County, Beijing Municipality
<i>Type</i>	Livestock farm, 200,000 pigs and aquatic produce	Livestock farm, 60,000 pigs
<i>Wastewater Effluent</i>	3,000 tons per day	600 tons per day
<i>Biogas Production</i>	8,500 cubic meters per day	2200 cubic meters per day
<i>Use of Biogas</i>	Generate electricity and some heat	Generate electricity and some heat
<i>Electricity Production</i>	13,500 kWh/day	4,000 kWh/day
<i>Generating Capacity</i>	~230 kW	~100 kW
<i>Use of Energy</i>	Sold to local grid PPA	All used on site
<i>Other Value</i>	142 tons fertilizer per day	8 tons fertilizer per day



Hybrids



Hybrid Village Power Projects

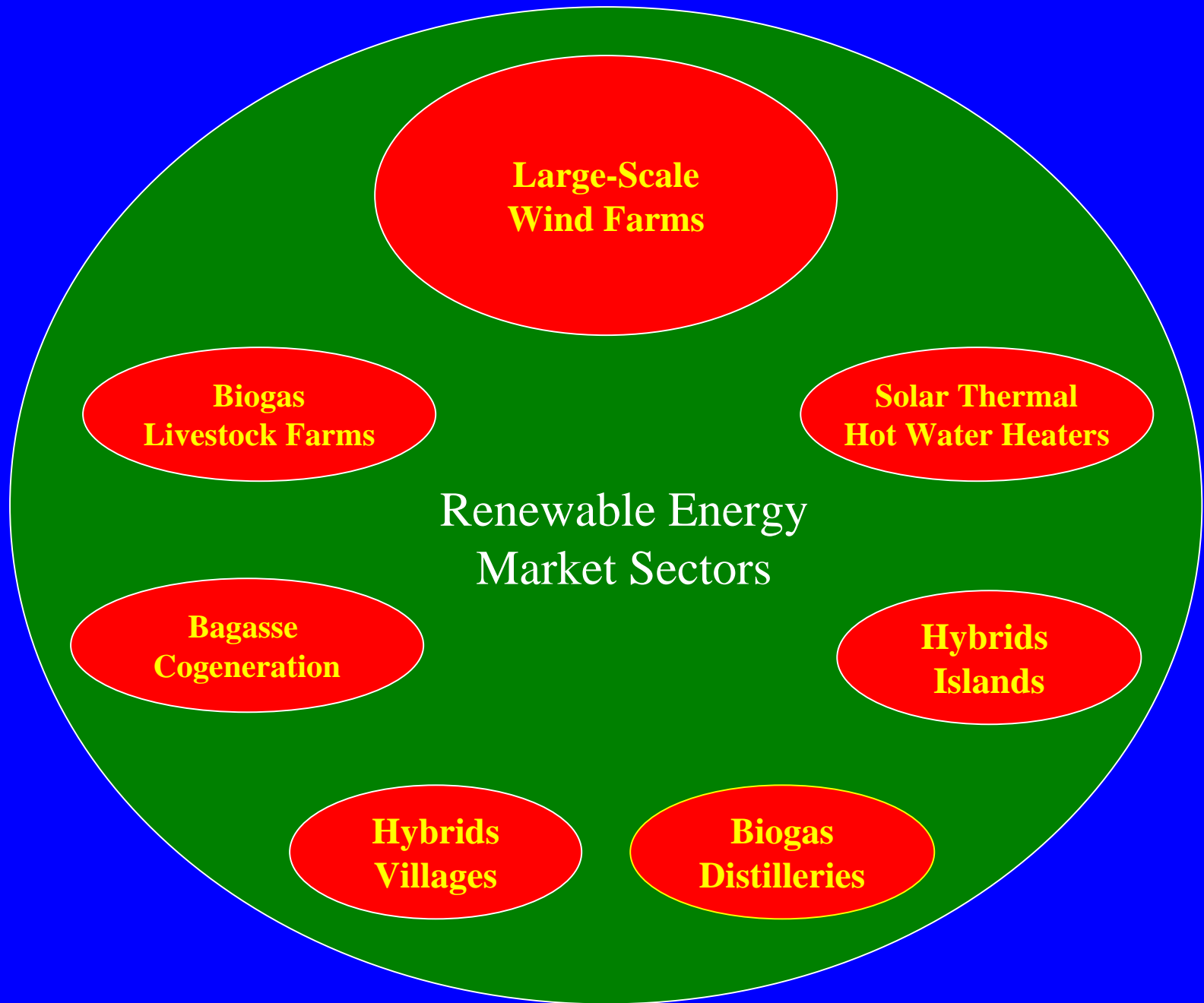
<i>Characteristics</i>	<i>Beilong Dao</i>	<i>Xiao Guan Dao</i>
<i>Location</i>	Rui'an County, Zhejiang Province	Aoshanwei Township, Shandong Province
<i>Type</i>	Wind/Diesel System with battery storage	Wind/PV/Diesel System with battery storage
<i>People/Families</i>	250 Households and 1500 People	26 Households and 270 people, plus seasonal tourist population
<i>Economic Activities</i>	Fishing, seafood processing	Fishing and tourism
<i>Use of Power</i>	Residential and small business	Residential, economic development tourism/fishing
<i>Power per Household</i>	~ 300 W	~ 300 W
<i>Total System Power</i>	100 kW	55 kW
<i>Other Sites</i>	300 Unelectrified inhabited islands off Zhejiang	Similar

Workshops and Training

- **Investment Opportunity Fora in selected sectors**
- **Workshops/training targeted at specific renewable market sectors with commercialization objectives**
- **Generic activities with broad participation for business and finance training**
 - **Project development, feasibility studies, project evaluation**
 - **Business training (IPP's, RESCO's), financing mechanisms, etc.**
 - **Entrepreneurial training, etc.**
- **Technical assistance workshops and training**
 - **Standards and certification**
 - **Resource assessment, etc.**

Technical Assistance

- **Standards and certification**
 - Consensus building standards development
 - Certification project for solar hot water systems
- **Resource assessment and GIS capacity building**
 - National resource database inventory
 - GIS based information products
- **Technical assistance for wind farms**
 - Regional Mapping, Site specific resource assessment
 - Wind farm grid connection issues
 - International utility intern program



Wind



- **Utility Internship Program**
- **International best practices for wind farm/grid interconnection**
- **Wind resource assessment support, database development and measurement capabilities**
- **Alternative financing mechanisms and business development**

Solar Thermal



Photo from Winrock International

- **Standards and certification procedures**
- **Support of certification and testing facilities**
- **Resource assessment support**
- **New market opportunities, business and finance training**

Bagasse Cogeneration



- **Technology/application project to support commercialization**
- **Workshops and training for project development and evaluation, negotiating power sales, information transfer**
- **Financing and business development**

Biogas



- **Technology/application projects - technology transfer and institution development**
- **Workshops and training for information dissemination**
- **Project development support**
- **Policy and regulatory support**

Hybrid Systems



- **Technology/application projects - technology transfer and institution development**
- **Workshops and training for information dissemination**
- **Support of provincial rural electrification**
- **Microcredit/microenterprise**

Coordination and Collaboration

- **Coordination of GEF Projects through SETC**
 - UNDP Projects
 - World Bank and Asian Development Bank
- **Coordination with renewable energy groups in China**
 - Chinese government agencies
 - Multilateral and bilateral donor agencies
 - Foundations
- **Strategic partners**
 - International and domestic banking community
 - Corporate and private investors
 - Project developers

Business Finance Workshop

April 5-7, Beijing

- **Information Exchange**
 - Broad stakeholder representation
 - Received inputs from renewable energy community
 - Review of international business/finance/policy successes
 - Exercise in consensus building and participatory approaches
- **Outputs from Five Working Groups**
 - Key issues and constraining factors
 - High value capacity building activities
 - Elements of commercialization support strategy